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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/384,932	08/26/1999	CLAUS TONDERING	09918/024001	8504
20985	7590	09/02/2004	EXAMINER	
FISH & RICHARDSON, PC 12390 EL CAMINO REAL SAN DIEGO, CA 92130-2081			AVELLINO, JOSEPH E	
			ART UNIT	PAPER NUMBER
			2143	23

DATE MAILED: 09/02/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/384,932

Applicant(s)

TONDERING, CLAUS

Examiner

Joseph E. Avellino

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 26 April 2004.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-23 and 25-35 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-23 and 25-35 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

1. Claims 1-23, and 25-35 are pending in this examination.

Claim Rejections - 35 USC § 103

The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

2. Claims 1, 4, 5, 8-10, 17-18, 21-23, and 25-26, 29-32, 34, 35, are rejected under 35 U.S.C. 103(a) as being unpatentable over Lowe (USPN 6,125,396) in view of Nicola et al. ("Fast Simulation of the Leaky Bucket Algorithm" Proceedings of the 1994 Winter simulation Conferences Society for Computer Simulation International (c) 1994) (hereinafter Nicola).

3. Referring to claims 1 10, 17, 18, and 26, Lowe discloses a method comprising:
representing, by a current resource usage value, a total amount of a resource that is managed by a software tool and is currently in use by at least two processes (col. 4, line 30; col. 7, lines 15-16);

in connection with additional use of the resource by one of the processes, and at a time when increases in the current usage value by the amount of additional use does not exceed a specified maximum resource usage level, increasing the current usage

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value by the amount of additional use, and allowing the additional use of the resource by the process (Figure 4; col. 5, line 55-62; col. 7, line 39 to col. 8, line 45).

Lowe does not disclose that the total resource usage is decreased using a preset amount per unit of time. However it is well known and expected in the art that a leaky bucket system has the ability to have a predetermined (i.e. constant) drain level (i.e. constant rate usage by the clients of Lowe). In support of this statement Nicola discloses another leaky bucket algorithm wherein tokens are generated at a fixed interval (i.e. preset amount per unit of time) (p. 266, col. 2, ¶ 2). It would be obvious to a person of ordinary skill in the art at the time the invention was made to combine the teaching of Nicola with Lowe to effectively police a QoS algorithm thereby increasing the fairness of the system and allowing starved processes access to the resource as supported by Nicola p. 266, col. 2, ¶ 1).

4. Referring to claim 4, Lowe discloses the network operates in a real-time networking environment (col. 6, lines 49-67). Although the embodiment primarily discussed in Lowe refers to a non-real-time client, the network is a real-time environment. Furthermore Lowe discloses that real-time clients usually have a reserve set at zero, however "the configuration data on which the reserve for the real-time clients is based on could be changed" which indicates that a reserve can be set at a non-zero number, indicating the system can work for a real-time client (col. 6, lines 53-63).

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5. Referring to claim 5, Lowe discloses the software tool is modeled as a leaky bucket (Figure 2; col. 3, line 55 to col. 4, line 53).

6. Referring to claim 7, Lowe discloses regulating usage of the resource comprises modifying the available credit by adjusting a maximum resource usage value (reserve value) (col. 5, line 55-65).

7. Referring to claim 8, Lowe discloses notifying the process that additional use of the resource is allowed when increasing the current usage value by the amount of additional use does not exceed the specified maximum resource usage level (col. 7, lines 12-23).

8. Referring to claim 9, Lowe discloses notifying the process (client) comprises sending a message to a network address (it is inherent that a client on a network as a network address and that any message sent to the client is sent to the address of the client) of the process (client) (col. 7, lines 12-23).

9. Claim 18, is rejected for similar reasons as stated above. Furthermore, Lowe discloses a network including a plurality of devices, comprising:

a plurality of resources running in the network ("...governing access to computer resources") (col. 5, lines 1-9);

computer software, residing on a computer readable medium at each device (Lowe discloses that the client governs its own access to shared resource 428, col. 7, lines 20-23, therefore the client must have software residing on computer readable medium at each device) accessing the plurality of resources.

10. Referring to claim 22, Lowe discloses the available amount of credit comprises a difference between a maximum resource usage allocated to the at least two processes and the amount of resource currently used by the at least two processes (col. 8, lines 40-45).

11. Referring to claim 23, Lowe discloses the available amount of credit increases per unit of time by an estimated value of the resource that becomes available per unit of time (col. 8, lines 17-23).

12. Claims 17, 21, are rejected for similar reasons as stated above. Furthermore Lowe discloses the system comprises computer software, residing on a computer-readable medium at a device connected to a network (col. 3, lines 10-25).

13. Referring to claim 25, Lowe discloses a method of managing usage in a resource as stated in the claims above. Lowe does not disclose determining a priority for a process for a resource and allocating the resource based on the priority. However it is well known in the art that higher priority processes (i.e. interrupt threads in a computer,

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master computer nodes in a network, etc.) get preference over lower priority processes (i.e. garbage collection, other menial system processes, etc.) for resource contention since they are of higher importance. Therefore it would have been obvious to one of ordinary skill in the art to provide for prioritizing resource allocation based on the priority of the processes to allow for higher priority processes not to be impeded by a lower priority process.

14. Referring to claim 29, Lowe discloses the invention substantively as described in claim 1. Lowe does not specifically state if increasing the current usage exceeds a maximum, waiting until such time as by increasing will not exceed a maximum. Nicola discloses in the standard leaky bucket algorithm that if there are not tokens left in the bank, then the transaction is either queued in a buffer or lost (p. 226, col. 2, ¶ 2). It would be obvious to a person of ordinary skill in the art at the time the invention was made to combine the teaching of Nicola with Lowe to effectively police a QoS algorithm thereby increasing the fairness of the system and allowing starved processes access to the resource as supported by Nicola p. 266, col. 2, ¶ 1).

15. Referring to claim 30, Lowe discloses invention substantively as described in claim 1. Lowe does not specifically state the decreasing of the current usage value is independent of the amount of use of the resource by the process. Nicola discloses in the standard leaky bucket algorithm that the decreasing is performed at fixed intervals (regardless of the amount of usage by the processes (p. 226, col. 2, ¶ 2). It would be

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obvious to a person of ordinary skill in the art at the time the invention was made to combine the teaching of Nicola with Lowe to effectively police a QoS algorithm thereby increasing the fairness of the system and allowing starved processes access to the resource as supported by Nicola p. 266, col. 2, ¶ 1).

16. Referring to claim 31, Lowe discloses different software tools on different devices that are associated with a common resource have different specified maximum resource usage levels (i.e. different software tools for non-real time clients and real-time clients, since real-time clients have a reserve amount fixed at zero) (col. 6, lines 53-67).

17. Claim 32, 34, and 35 are rejected for similar reasons as stated above.

Claims 2, 3, 19, 20 and 33, are rejected under 35 U.S.C. 103(a) as being unpatentable over Lowe in view of Overby, Jr. et al. (USPN 6,016,503) (hereinafter Overby).

18. Referring to claims 2, and 33 Lowe discloses a method of managing usage of a resource in a network system, however Lowe does not disclose that the resource comprises one of memory space or system processor time. Lowe does, though, disclose that "an embodiment of the invention applies to any resource with a limited capacity that is shared concurrently by users of the resource" (col. 9, lines 13-15). In analogous art, Overby discloses another method of managing usage of a resource in a

network system wherein the shared resource is memory space (control the allocation of memory) (col. 5, lines 13-15). It would be obvious to a person of ordinary skill in the art at the time the invention was made to combine the teaching of Lowe with Overby to provide a more efficient method of memory utilization, thereby reducing processing overhead and wasting unused memory on processes which do not require their total allotted memory space.

19. Referring to claim 3, Lowe discloses a method of managing usage of a resource in a network system. Lowe does not disclose that the network comprises an embedded computer system. In analogous art, Overby discloses another method of managing usage of a resource wherein the network comprises an embedded computer system (col. 1, lines 13-20). It would be obvious to a person of ordinary skill in the art at the time the invention was made to combine the teaching of Lowe with Overby to provide a more efficient method of memory utilization, thereby reducing processing overhead and wasting unused memory on processes which do not require their total allotted memory space.

20. Claims 19, and 20 are rejected for similar reasons as stated above.

Claim 6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lowe in view of Garner et al. (USPN 6,112,085) (hereinafter Garner).

21. Referring to claim 6, Lowe discloses a method for managing usage of a resource as stated in the claims above. Lowe does not disclose the method further comprising determining the priority of the resource and allocating the resource in response to an increased priority of the resource. Garner discloses:

determining a priority of the resource (col. 58, lines 57-63); and

allocating the resource based on the priority of the resource (col. 58, line 64-67).

It would be obvious to a person of ordinary skill in the art at the time the invention was made to combine the teaching of Garner with Lowe to allow preferred resources to be allocated to increase overall speed and efficiency of the network.

22. Claims 11-16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lowe in view of Harrington et al. (USPN 6,289,012) (hereinafter Harrington).

23. Referring to claim 11, Lowe discloses the method of managing a plurality of resources as stated in the claims above. Lowe further discloses associating with each software tool a maximum usage level (col. 7, lines 13-23). Lowe does not disclose allocating a descriptor representative of any of the software tools to any of the plurality of devices, although this can be inferred since a request from the client process to the resource coordinator 420 to request access to the shared resource 428 (col. 7, lines 13-15). Harrington discloses allocating a descriptor (i.e. hash ID) representative of any of the software tools to any of the plurality of devices (col. 15, lines 46-50). It would be obvious to a person of ordinary skill in the art at the time the invention was made to

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combine the teaching of Lowe with Harrington for more efficient data downloads and data resiliency as supported in Harrington (col. 3, lines 18-34).

24. Referring to claim 12, Lowe discloses:

decrementing the maximum usage level of the software tool in response to the use of the resource associated with the tool by any of the plurality of devices (col. 7, line 40 to col. 9, line 9);

calculating an available credit based on the usage of the resource associated with the tool as a function of the maximum usage level (col. 7, line 40 to col. 9, line 9);
and

indicating to a device waiting to use the resource associated with the tool of the available credit (col. 7, line 40 to col. 9, line 9).

25. Referring to claim 14, Lowe further discloses incrementing the maximum usage level (assigned rate) to at least correspond to the specified usage level (i.e. usage level available on the resource) (e.g. abstract).

26. Referring to claim 15, Lowe in view of Harrington discloses disclose the method of managing a plurality of resources as stated in the claims above. Although Lowe discloses allowing a resource to exceed its assigned rate, Lowe does not specifically state overriding the usage level to allow a device access to one of the plurality of resources. Harrington discloses when a pre-allocated memory element is not available,

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the list will override the reallocated space and the list "grows to add additional memory elements to the List" (col. 15, lines 25-30). It would be obvious to a person of ordinary skill in the art at the time the invention was made to combine the teaching of Low with Harrington for more efficient data downloads and data resiliency as supported in Harrington (col. 3, lines 18-34).

27. Referring to claim 16, Lowe in view of Harrington disclose the method of managing a plurality of resources as stated in the claims above. Harrington further discloses destroying the software tool in response to a request from one of the devices (col. 16, lines 52-56 and Figure 26). It would be obvious to a person of ordinary skill in the art at the time the invention was made to combine the teaching of Harrington with Lowe to allow for efficient memory management and to facilitate garbage collection in the system.

Claim 28 is rejected under 35 U.S.C. 103(a) as being unpatentable over Lowe in view of Ho et al. (USPN 6,578,082) (hereinafter Ho).

28. Lowe discloses a method of managing usage of resources as stated in the claims above. Lowe does not specifically disclose the preset amount represents an estimated amount of resource which comes available per unit of time. Ho discloses preset amount represents an estimated amount of resource which comes available per unit of time (col. 7, lines 18-41). It would be obvious to a person of ordinary skill in the art at the time the

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invention was made to combine the teaching of Lowe with Ho to increase efficiency of the system by not calculating the actual resource availability, rather the estimated value, thereby reducing processing overhead and increasing throughput.

Response to Amendment

29. Applicants other arguments dated April 26, 2004 have been considered but are not persuasive.

30. In the remarks, Applicant argued in substance that (1) Lowe teaches away from the claimed invention.

31. As to point (1) the claimed invention states that the current usage value increases when a process increases its use of the resource, provided it does not exceed a maximum resource value. The difference between the current usage value and the maximum resource value is the "reserve" as taught by Lowe. And since the current usage value increases, the reserve *decreases* the amount that is increased. By this rationale Lowe does not teach away from the claimed invention.

Conclusion

32. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP

§ 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Joseph E. Avellino whose telephone number is (703) 305-7855. The examiner can normally be reached on Monday-Friday 7:00-4:00.

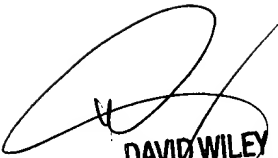
If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David A. Wiley can be reached on (703) 308-5221. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 872-9306 for regular communications and (703) 872-9306 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 305-3900.

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